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ABSTRACT

A quasi-experimental design was used to investigate changes in learning outcomes for students enrolled in large-lecture/break-out sections versus in self-contained sections of the basic communication course. More precisely, the study explores the relationship between communication apprehension, immediacy and learning outcomes for the two class formats. Results indicate that students' cognitive learning outcomes are slightly higher in the large-lecture/break-out sections versus self-contained sections. In addition, affective learning decreases for all students from the first day of class and slightly more for students in the large-lecture/break-out sections. However, when the teacher is perceived as highly immediate, there is no difference in formats. (Contains 5 notes, 55 references, 1 figure, and 5 tables and a figure of data; an appendix contains the cognitive learning measure items.) (Author/RS)

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Cognitive and Affective Learning in the Basic Course:

Effects of Delivery Format, Immediacy, and Communication Apprehension

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Paper presented to the Basic Course Division "Top Three Panel" at the National Communication Association 1998 annual convention in New York.

Running head: Learning in the Basic Course

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Cognitive and Affective Learning in the Basic Course:

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A quasi-experimental design was used to investigate changes in learning outcomes for students enrolled in large-lecture/break-out sections versus in self-contained sections of the basic course. More precisely, the study explores the relationship between communication apprehension, immediacy and learning outcomes for the two class formats. Results indicate that students' cognitive learning outcomes are slightly higher in the large-lecture/break-out sections versus self-contained sections. In addition, affective learning decreases for all students from the first day of class and slightly more for students in the large-lecture/break-out sections. However, when the teacher is perceived as highly immediate, there is no difference in formats.

Cognitive and Affective Learning in the Basic Course:
Effects of Delivery Format, Teacher Immediacy, and Communication Apprehension

Balancing the need to teach large service courses with limited resources represents a consistent problem in higher education. Communication departments in particular face this problem insofar as the basic course in speech communication constitutes a fundamental aspect of general education in many colleges and universities (Carlson & Smith-Howell, 1995; Zabava Ford & Wolvin, 1993). One common way to teach more students with fewer resources involves the use of a large lecture with break-out discussion/recitation sections. Although use of such a delivery format may be a financial necessity for some departments, questions exist surrounding the educational impact of the lecture/discussion format compared to a self-contained class format (e.g., Giroux, 1994; Sprague, 1993).

Specific concerns about delivery format center on class size and its influence on learning outcomes. In addition, several authors have specifically targeted the traditional teaching method of lecture as ineffective on student learning due to low student involvement and a lack of student empowerment (e.g., Giroux, 1994; Sprague, 1993). Previous research has found that large class sizes negatively impact the cognitive and affective learning outcomes of students (e.g., Glass & Smith, 1979; Smith & Glass, 1980). From their meta-analysis, Glass and Smith concluded that for many instructional researchers, the issue of class size and student achievement is no longer pertinent. However, class size in their meta-analysis ranged from a single tutored student to classes with 40 students. Although the difference between 10 and 40 students was significant, differences between 20 and 40 students were not. Importantly, the contemporary communication basic course class size ranges from 20 to 40 students for self-contained sections and up to 400 or more students in large lecture sections. Hence, Glass and Smith's contention regarding the effect of class size on student achievement appears to require further examination.

Moreover, some research on class size has challenged the idea that large-lecture formats are exclusively detrimental to learning outcomes (Kulik & Kulik, 1989). Hayter (1979) argued that students can

be particularly engaged during lectures. Hoover, Baumann, and Shafer (1970) and Eash and Bennett (1964) found no difference in learning between classes of differing sizes. The issue of class size and learning may become particularly clouded when investigating a mixed-size format (i.e., lecture/break-out section format, where a large-lecture class is offered with 200 or more students in conjunction with small break-out laboratory sections with 25 or fewer students). De Cecco (1964) argued that a mixed-size format may lead to higher student achievement than would an exclusively large-lecture class.

In brief, three issues warrant the study of communication variables and learning outcomes in a mixed-size format of the basic course: (1) the reality of large class sizes in the basic course due to financial constraints--few communication departments can afford to teach service courses in sections of 10-15 students; (2) the controversy regarding the use of lecture as a primary teaching tool; and (3) insufficient research into communication variables and learning outcomes in very large classes (i.e., 200 or more students) and mixed-size format classes. In the present study, we utilize a quasi-experimental design to compare differences in two of Bloom's (1956) three categories of learning outcomes (cognitive and affective) between students enrolled in a mixed-size format version of the basic public speaking course with students enrolled in a self-contained classroom version. We focus on how cognitive and affective learning are differentially affected by delivery format. Additionally, we examine links between teacher immediacy and communication apprehension with learning outcomes to determine whether or not these variables and delivery format associate to impact student cognitive and affective learning.

Links Between Learning Outcomes and Delivery Formats

Delivery format can be conceptualized in a variety of ways. Buerkel-Rothfuss and Weaver (1993) discussed the three most common class delivery formats as the following: (1) exclusively large-lecture, (2) a mixed-size format, and (3) exclusively small, self-contained sections. Hence delivery format can be defined as potential variations in the combination of class size and teaching strategy. Teaching strategy (i.e., lecture versus discussion, etc.) constitutes a fundamental aspect of delivery format. For example, large classes

typically rely on the lecture technique out of necessity. However, both small and large classes utilize lectures, and both class sizes can incorporate some forms of active learning. Nonetheless, class size appears to be the more influential aspect of delivery format since it tends to influence teaching strategy selection.

Actual class sizes within Buerkel-Rothfuss and Weaver's three formats can vary greatly with anywhere from 60 to 300 students in a large lecture to 10 to 30 students in a break-out sections or in self-contained sections. The comparison between a mixed-size format and self-contained classes may be the most meaningful for communication departments attempting to re-structure the basic course, because only these two formats allow for a performance component typically required in many introductory courses (Gibson, Hanna, & Leichty, 1990). Moreover, Gray (1989) noted previous research speculated that the mixed-size format would allow speech communication departments to teach more students while ensuring academic standards. Ultimately, the success or failure of maintaining academic standards would be reflected in the cognitive and affective outcomes.

The preferred method of evaluating student achievement in the classroom involves the assessment of changes in learning outcomes by instructors (Calfee, 1994). According to Bloom (1956), teachers and researchers can assess learning by identifying changes in any or all categories of student learning outcomes: cognitive, affective, or behavioral. Communication researchers have particularly focused on cognitive and affective learning outcomes in recent years (e.g. McCroskey, Sallinen, Fayer, Richmond, & Barraclough, 1996; Richmond, Gorham, & McCroskey, 1987; Rodriguez, Plax, & Kearney, 1996). Christophel (1990) defined cognitive learning as "comprehension and retention of knowledge" (p. 323) and affective learning as concerned with the attitude of the learner toward the instructor or course subject (see also Bloom, 1956). Previous research has attempted to show how class characteristics such as delivery format might be linked to these learning outcomes (Cheatham & Jordan, 1976; Hedges & Stock, 1983; Kulik & Kulik, 1989). The results regarding cognitive learning are not necessarily consistent with those found for affective learning.

Specifically, Meredith and Ogasawara (1982) asserted that large class sizes probably exert more negative influence on affective outcomes rather than on cognitive outcomes

Cognitive Learning and Delivery Format

Some research demonstrates that cognitive learning is adversely impacted by delivery format. McKeachie (1994) indicated that smaller, discussion oriented classes are better for retention or transference of knowledge. Garside (1996) found some support for this argument when she directly compared lecture, as a teaching strategy, with an approach that emphasized group problem solving. She argued that students learn critical thinking skills in both formats, but perform better when classroom interaction is more immediate (i.e., physically) and when students have a greater involvement in learning. De Cecco (1964) compared large-lecture sections with small classes in psychology and found no significant difference in achievement. However, "students consistently report that the greater benefit lies with the small class size [and] this suggests that students frequently report that class size is a handicap to learning when they are asked specifically" (p. 72). Mahler and Neumann (1987) found an inverse relationship between class size (small, n = 1-4; medium, n = 5-16; large, n =17-50) and learning; as class size increased, achievement on cognitive measures decreased. These authors concluded that "apparently it is easier to activate a small number of learners than a large audience" (p. 143). Based on their meta-analysis of class size and achievement, Glass and Smith (1979) asserted that "A clear and strong relationship between class size and achievement has emerged" such that smaller classes yield higher ratings of achievement (p.15). The researchers concluded that "there is little doubt that other things equal, more is learned in smaller classes" (p. 15; see also Hedges & Stock, 1983).

On the other hand, Kulik and Kulik (1989) cited Educational Research Services (1980) and Slavin (1984) for their criticisms of Glass and Smith's findings. Glass and Smith were indicted for using inappropriate and narrow standards for selecting studies for their meta-analysis, which may have resulted in incorrect effects being reported. For example, one that greatly influenced the findings was not a study of

cognitive gain: it measured accuracy of throwing a tennis ball against a wall (Kulik & Kulik, 1989). Most importantly, Kulik and Kulik (1989) argued that the amount of variance in cognitive learning accounted for by delivery format "does not play and important direct role in determining student achievement" (p. 310).

Other research suggests that cognitive learning may not be negatively impacted by class size. Hoover et al. (1970) found no differences in cognitive learning due to delivery format. They compared a mixed-size format (i.e., large lecture of 160 and labs sections of 20 students) with smaller self-contained classes (i.e., 50 to 60 students). Similarly, Eash and Bennett (1964) found no differences for psychology students between a mixed-size format and small classes on two different objective tests. Moreover, when the focus of cognitive achievement is knowledge acquisition, lecture-based teaching has been found to be particularly effective. For example, McKeachie (1994) reported that the use of a lecture format is as effective as other methods of instruction when assessed by measures of knowledge. In addition, Garside (1996) compared lecture with group discussion and found that lecture yielded more learning with regard to a score reflecting total learning achievement.

Affective Learning

Results regarding affective learning appear more consistent than do those regarding cognitive learning: students prefer a delivery format that utilizes smaller classes. Cheatham and Jordan (1976) found that students' attitudes were more positive toward a lecture method using small class size (twenty students per class) than a lecture method using a larger class size (either forty or eighty students). Buerkel-Rothfuss and Weaver (1993) posited that students' attitudes could be negatively affected by large lectures, which tend to be largely impersonal, provide little teacher-student interaction, and allow students to disappear into the crowd. Negative attitudes lead to both low attendance and student involvement.

Some scholars have criticized a lecture-based teaching strategy, which is typically emphasized in the large class. For example, Shaughnessy (1995) argued that lecture-based instruction focuses on the delivery of knowledge regardless of its effect on student learners (see also Shor, 1992). Lecture-based instruction may

negatively impact affective learning because students are not actively involved in using the information to develop skills and competencies; students simply absorb concepts long enough to get through the next test (Moore, Masterton, Christophel, & Shea, 1996). Apparently, large classes that utilize lecture exclusively may pose the greatest threat to affective learning.

However, an exclusively large class format represents an unrealistic option for communication classes that incorporate performance of communication activities such as public speaking, group communication, and interpersonal communication. The questions for the current study focus on student achievement in a mixed-size format versus self-contained sections of the basic public speaking course. Specifically, we attempt to explain the differential impact of delivery format on cognitive and affective learning using two communication-based propositions.

First, we propose that mixed-size formats reduce the opportunity for student interaction and student involvement in activities that promote affective learning. Previous research has supported that affective learning is negatively impacted by delivery format (e.g., Cheatham and Jordan , 1976; Moore et al., 1996). Kulik and Kulik (1989) cited Smith and Glass's (1980) meta-analysis as providing good evidence that larger class sizes lead to lower affective learning than do smaller classes.

Second, we propose that mixed-size formats provide a consistent conceptual base for understanding course content. Such consistency would likely be registered by increased cognitive learning over time. Several authors have argued that large class size does not necessarily deter cognitive learning (e.g., Eash & Bennett, 1964; Kulik & Kulik, 1989). Moreover, Rovin, Lalonde, and Haley (1972) posited that a mixed-size format may be a particularly effective delivery format for student cognitive achievement: "Namely, the lecture may serve as a directional device, providing guidance for further study....For those students having the lectures, the laboratory sessions served to reinforce what had been heard or learned in the lectures" (p. 327). The following hypotheses are offered to explore the potential links between course delivery format and learning outcomes.

H1: Students enrolled in a mixed-size format of the basic course show greater improvement in cognitive learning scores than do students in self-contained sections.

H2: Students enrolled in self-contained sections of the basic course show greater improvement in affective learning scores than do students in a mixed-size format.

Learning Outcomes, Immediacy, and Communication Apprehension

Hedges and Stock (1983) argued that although class size appears to account for part of the variation in student achievement, "substantial sources of systematic variation remain to be explained" (p. 84). Instructional communication researchers have identified two key variables that may account for part of the unexplained variance: teacher immediacy (e.g., Christophel, 1990; Comstock, Rowell, & Bowers, 1995; Rodriguez et al., 1996) and student communication apprehension (e.g., Bourhis & Allen, 1992; Richmond & McCroskey, 1998). The following paragraphs review research that links immediacy and apprehension with cognitive and affective learning outcomes. In addition, connections between immediacy, apprehension, and delivery format are discussed as they may pertain to learning outcomes.

Immediacy and Learning

One way that instructors can create and maintain a conducive environment for learning in the classroom is through immediacy behaviors or communication that serves to reduce the psychological distance between people (Andersen, 1979; Mehrabian 1969). Comstock et al. (1995) observed that "teachers can use immediacy behaviors to communicate this positive regard and stimulate their students" (p. 251). Rodriguez et al. (1996) argued that "no other teacher communication variable has been so consistently associated with increases in both students' affective and cognitive learning in the classroom" (p. 291). Indeed, students perceive immediate instructors as more effective and approachable, and such student perceptions likely contribute to a learning environment in which students are engaged and comfortable interacting (Moore et al., 1996). Regardless of the instructional setting in which immediacy is communicated, students assess

immediacy (Frymier & Thompson, 1995; Gorham, 1988) and they typically interpret it positively (Moore et al., 1996).

Research on immediacy and learning indicates that immediacy has a significant impact in the classroom; it is correlated with cognitive (Gorham & Zakahi, 1990; Neuliep, 1995; Richmond et al., 1987) and affective learning outcomes (Norton & Nussbaum, 1981; Plax, Kearney, McCroskey, & Richmond, 1986). Kelley and Gorham (1988) argued that "immediacy is related to arousal, which is related to attention, which is related to memory, which is related to cognitive learning" (p. 201). Moreover, student motivation levels can also be enhanced as a result of highly immediate teachers (Christophel, 1990; Frymier, 1993). Sanders and Wiseman (1990) found positive associations between immediacy and perceived cognitive, affective, and behavioral learning across ethnic groups. Richmond et al. (1987) posited the central relevance of immediacy to learning outcomes:

> Teachers with low immediacy will generate lower cognitive and affective learning. Teachers with moderate immediacy will generate higher cognitive learning and moderate affective learning. Teachers with high immediacy will generate similar (to moderately immediate teachers) cognitive learning, but higher affective learning. (p. 588)

Debate still exists regarding whether the relationship between teacher immediacy and student cognitive and affective learning represents a linear (Christensen & Menzel, 1998; Christophel, 1990) or curvilinear trend (Comstock et al., 1995). Nevertheless, research positively links immediacy to learning outcomes. Accordingly, the following hypotheses are posed to confirm such a relationship within the context of different class formats:

H3: Students who perceive their teachers as higher in immediacy show greater improvement in cognitive learning than do students who perceive their teachers as lower in immediacy.

H4: Students who perceive their teachers as higher in immediacy show greater improvement in affective learning than do students who perceive their teachers as lower in immediacy.

In addition, immediacy may help to further explain the connection between delivery format and learning outcomes. Gorham (1988) suggested that teachers in large classes have an enhanced responsibility to adopt specific verbal and nonverbal approach behaviors to reduce the psychological distance between student and instructor in these settings. Instructors of smaller classes typically receive higher ratings of immediacy than do instructors of larger classes (e.g., Gorham, 1988; Moore et al., 1996). In addition, Meredith and Ogasawara (1982) observed the following:

> As lecture size increased, there was a decrease in opportunity for students to know each other as well a decrease in small group discussion....Increasing the size of lecture classes may have a greater impact upon affective outcomes, such as intimacy/group interaction than upon cognitive outcomes. (p. 962)

Based upon the previous research and our first proposition that mixed-size formats reduce the opportunity for student interaction and student involvement in activities that promote affective learning, we anticipate that ratings for students' perceptions of teacher immediacy will be lower for the lecturers than for the instructors in the small classes due to lowered student involvement. However, the proposition also suggests that perceptions of immediacy may also interact with delivery format on affective learning. Perhaps if students perceive a connection between themselves and the lecturer, the potential negative effects of format will be reduced.

The proposition regarding cognitive learning does not appear predictive regarding the relationships among immediacy, delivery format, and cognitive learning. However, previous research suggests a relationship between immediacy and cognitive learning (Gorham & Zakahi, 1990; Neuliep, 1995; Richmond et al., 1987). The following research questions are offered to examine potential connections between immediacy and delivery format on learning outcomes.

RQ1: Do student perceptions of teacher immediacy interact with delivery format to influence cognitive learning?

RQ2: Do student perceptions of teacher immediacy interact with delivery format to influence affective learning?

Communication Apprehension and Learning

A substantial body of research identifies communication apprehension as a major impediment to student success across a variety of contexts. Communication apprehension is commonly conceptualized as fear or anxiety associated with either real or anticipated communication with another person (McCroskey, 1984). Richmond and McCroskey (1998) observed that "for over 25 years, perhaps more than any other single communication construct, communication apprehension has been a major concern of researchers and scholars. The reason for the intensive focus is because it permeates every facet of an individual's life--school, work, friendships, and so on" (p. 41). Research indicates that an estimated 20 percent of the population suffers from some form of communication apprehension. These results are consistent across samples of participants from several populations that surveyed over 60,000 people (Richmond & McCroskey, 1998).

The relationship between communication apprehension and academic achievement is well documented (Comadena & Prusank, 1988; McCroskey & Andersen, 1976). For instance, apprehensive students have lower grade-point averages and score lower on college entrance exams (McCroskey & Andersen, 1976; McCroskey, Daly, & Sorenson, 1976). Students who rate themselves as highly apprehensive expect to achieve less academically than students who report low or moderate levels of communication apprehension. O'Mara, Allen, Long, and Judd, (1996) indicated that "by the time students enter college, negative expectations associated with anxiety about communicating in the classroom have increased to the point that high trait-like communication apprehensive's across the board--generally and contextually--suffer negative consequences academically" (p. 124). Finally, based on their meta-analysis of over 23 studies on communication apprehension and cognitive learning outcomes, Bourhis and Allen (1992) found a small but clear negative relationship between communication apprehension and cognitive performance. Although Bourhis and Allen concluded that future research on a simple connection between

apprehension and cognitive learning may not be needed, they recommend that further research be conducted to explain connections between apprehension, learning, and other variables such as class size. Coincidentally, Gray et al. (1986) explored the relationships between class size, learning outcomes, and communication apprehension. Their findings indicate that apprehensive students perceive that they learn more in smaller, more personalized settings than in large lecture-based settings. Moreover, Dwyer (1998) argued that communication apprehension and GPA may not be correlated due to the fact that higher education offers a variety of teaching methods in which students with different needs can succeed (see also Ericson & Gardner, 1992).

These studies suggest that the relationship between learning outcomes and class delivery format may be affected by the students' communication apprehension. Perhaps communication apprehension moderates the relationship between delivery format and learning outcomes. If so, it is unclear from the previous research or the propositions presented how apprehension might interact with delivery format to impact learning outcomes. Such connections require empirical investigation. The following two hypotheses are posed to examine the relationship between communication apprehension and learning outcomes. In addition, two research questions examine potential links among delivery format, communication apprehension, and learning outcomes.

H5: Students who report higher communication apprehension show less improvement in cognitive learning than do students who report lower levels of communication apprehension.

H6: Students who report higher communication apprehension show less improvement in affective learning than do students who report lower levels of communication apprehension.

RQ3: Does communication apprehension interact with delivery format to influence cognitive learning?

RQ4: Does communication apprehension interact with delivery format to influence affective learning?

Method

Sample and Procedures

On the first day of class, 1515 undergraduates enrolled in the basic public speaking course at a large university completed pre-test measures before any course introduction or orientation was given. During the last two weeks of the same semester, 991 students completed the post-test measures. In both data collections, students volunteered to participate and no compensation was given. Student numbers were matched for pre- and post-tests, and 859 students remained as participants. Over 80 academic majors were represented. First-year students constituted 12%; sophomores were 50%; juniors were 25%; and seniors were 11% of the sample. The average age of the participants was 19.6 with a range of 17-45. Forty-seven percent of participants were male and 51% were female. The university was a large state university with predominantly white, middle-class students.

Forty-one percent of participants enrolled in the mixed-size version of the course (one large lecture with 345 students each week and break-out sections with 23 students twice a week) and 59% enrolled in the self-contained version (the equivalent of three class periods a week with the same instructor and 26 students). That semester was the first time that any sections of the course were taught with a large-lecture format. The participants were aware that a change was being contemplated and that the results of this investigation would assist the department in making a final decision regarding delivery format. Many participants let the researchers know informally that they did not like the idea of a large-lecture format. Moreover, the pre-test scores for affective learning revealed that students in the large-lecture format tended to have lower values for the course material at the beginning of the semester than did students in the self-contained sections, $F(850,1) = 3.97$; $p < .01$. However, differences were modest ($eta^2 = .01$).

Seventy-seven percent of the participants allowed researchers to obtain their pre-Fall GPA from the registrar ($M = 3.13$; $SD = .51$; range = 1.0 to 4.0) and 92% of participants allowed the researchers to obtain their SAT scores ($M = 1141$; $SD = 165$; range = 50-1600). Nearly half of the participants reported no prior

experience or training in public speaking (46%). Those reporting prior experience checked the following: other college class (3%); forensics (5%); high school speech class (35%); Dale Carnegie or other professional speaking course (0.5%); and other speech education or experience (11%).

Instrumentation

Unless otherwise noted participants responded to both pre- and post-test measures using a 1 to 5 scale, where 1 = less or none of the variable and 5 = more of the variable (e.g., 1 = strongly disagree, 5 = strongly agree). Both pre- and post-tests included McCroskey's (1982) 24-item Personal Report of Communication Apprehension (PRCA pre-test M = 2.59; SD = .62; alpha = .94 and post-test M = 2.33; SD = .58; alpha = .93), measures of affective learning and cognitive learning discussed below, and demographic measures. The PRCA means were transformed to create two additional variables: pre- and post-test PRCA scores were averaged to create a trait measure of communication apprehension (CA) (M = 2.46; SD = .56) and post-test PRCA was subtracted from pre-test PRCA to create a measure of CA change (M = .26; SD = .45). Both measures were tricotomized to create three groups: CA trait categories reflected low, moderate, and high apprehension. CA change categories ranged from increased up to stable apprehension (-1.38 to .08) to mostly stable reflecting a little positive change (.09 to .40) to reduced apprehension (.42 to 2.00). Hence forth, these categories will be referred to as "increased," "stable," and "reduced" apprehension. The post-test added McCroskey et al.'s (1996) nonverbal immediacy scale for student perceptions of teacher immediacy (M = 4.12; SD = .49; alpha = .79). Students in the mixed-size format rated their lecturer and break-out section instructors separately. For consistency, all comparisons for immediacy by format are between student ratings of the lecturer's immediacy (versus the break-out instructor) and student ratings of the self-contained section instructor's immediacy. Two categories for immediacy were created: lower perceptions of immediacy (below 4.10) and higher perceptions of immediacy (4.10 to 5.0).[1]

Affective Learning. The measure of affective learning consisted of 19 evaluative statements regarding the specific course material. For example, three items focused on the public speaking aspect of the

course (e.g., a course in public speaking is valuable). Three items focused on group communication (e.g., the ability to communicate in group settings is an important skill to learn). Three items related to speech criticism (e.g., being a skilled listener and consumer of messages benefits a person). Seven items related to culture and communication (e.g., learning about the speaking/listening characteristics of diverse cultural groups is important). Lastly, two items focused on the course/discipline in general (e.g., speech communication makes an important contribution to students).

Insert Table 1 about here

Using pre-test data, a principle components factor analysis with a VARIMAX rotation yielded two factors that accounted for 53% of item variance. No primary factor loadings were below .50 (see Table 1). The first factor contained 12 items pertaining to the main course content: public speaking, group communication, message analysis, and speech communication in general (pre-test $\underline{M}$ = 4.24; $\underline{SD}$ = .51; alpha = .90 and post-test $\underline{M}$ = 4.17; $\underline{SD}$ = .53; alpha = .89). The second factor contained seven items pertaining to culture and communication (pre-test $\underline{M}$ = 3.70; $\underline{SD}$ = .70; alpha = .88 and post-test $\underline{M}$ = 3.72; $\underline{SD}$ = .77; alpha = .91). Although the class emphasizes connections between culture and communication, the measure of affective learning used for the current study was best represented by the first factor. In order to provide evidence for criterion validity, a subsample of 306 this investigation's participants completed Christophel's (1990) measure of affective learning[2] on a different occasion during the time period of the post-test ($\underline{M}$ = 3.56; $\underline{SD}$ = .60; range = 1-5; alpha = .93). A Pearson correlation revealed that the affective learning measure used in the current investigation was associated with the Christophel measure ($\underline{r}$ = .41; $p < .01$).

Cognitive Learning. McCroskey et al. (1996) noted several problems with methods used to assess cognitive learning. McCroskey et al. specifically argued that measures such as tests currently used in the class have little to do with what was actually learned in the class from a given instructor. They also

posited that most of the tests are written by teachers with little attention to reliability and validity issues. Moreover, Comstock et al. (1995) argued that measures of perceived cognitive learning are also problematic in that such measures may be more closely related to affective learning rather than cognitive learning. Based upon the issues raised by McCroskey et al. and Comstock et al., a 16-item objective measure of cognitive learning was created. The test was used for research purposes only: students did not know when the testing would occur, did not prepare for the test in any way, and were assured that test scores would not affect their course grade in any way.

The items were based on course learning objectives and consisted of multiple choice and true/false questions. Post-test scores were used to create a reliable and valid set of items, since we expected students' knowledge to reflect correct answers to content items at the end of the term. First, items were redefined so that 1 = correct and 0 = incorrect answers. These recoded responses were then cluster analyzed using centroid clustering of binary data. Examination of the agglomeration schedule and the dendogram (Figure 1) indicated a single cluster composed of items 1-4, 6, 8-9, and 11-14. Results of the cluster analysis and the Russell and Rao similarity coefficient matrix (Table 2) demonstrate that the 11-item measure was internally consistent.

Insert Figure 1 and Table 2 about here

The cognitive learning measure was also tested for internal and external validity. First, to assess internal validity, a discriminant analysis was performed. More precisely, post-test scores were summed, and the 25th and 75th quartiles were calculated. In this manner, the bottom and top group members could be identified; that is, participants that scored below 7 (63% or a D) and above 9 (82% or a B-) on the 11-item measure. Correct classification of participants into low and high groups was 100% with one discriminant function (eigenvalue = 9.75; $\chi^2 = 803.76$; $r_c = .95$). In addition, the univariate F-tests for

each of the 11 items were significant ($p < .001$),[4] accounting for approximately 20-42% of item variance (i.e., Wilk's lambda = .80-.58) and indicating that each item assisted in the prediction of group membership. Accordingly, it was determined that the scale was internally valid. Second, criterion validity was tested using a Pearson correlation between the 11-item post-test measure and the final course grades ($r = .25$; $p < .001$). This positive relationship supports the use of the measure.

In addition to measuring cognitive learning over time via a pre- and post-test design, the current investigation assessed perceived cognitive learning loss using responses to Richmond et al., (1987) measure. During the post-test only, participants indicated on a scale of 0-9 (0 = learned nothing and 9 = learned more than in any other class you have had) how much they felt they had learned this semester and how much they felt they could have learned had they had the ideal instructor. Following Richmond et al. (1987), participants rating for item one was subtracted from their rating of item two to determine the student's perception of learning loss ($M = .65$; $SD = 1.69$). Since the learning loss variable is computed as a difference score, alpha cannot be computed. The learning loss measure was randomly associated ($r = -.02$) with a measure of cognitive gain that was computed by subtracting pre-test scores on the cognitive test from post-test scores. Analyses relevant to the tests of the hypotheses and research questions are reported in the results section to further explore the connection between perceived cognitive learning loss and the other variables in this study.

Results

Two separate 2 x 2 x 3 x 3 repeated measures ANOVAs were run to test all research questions and hypotheses pertaining to each of the dependent variables: cognitive and affective learning. In addition to the tests involving cognitive and affective learning changes over time, supplemental analyses were run with learning loss as the dependent variable. For all analyses, the between subjects factors were class delivery format (mixed-size format versus self-contained sections), perceptions of teacher immediacy, trait apprehension, and change in apprehension.[5] The within subjects factor was time (pre- and post-tests of

cognitive and affective learning). Table 3 reports the pre- and post-test means for cognitive learning, and Table 4 reports the pre- and post-test means for affective learning. No three-way interactions were significant for cognitive or affective learning over time; the only four-way interactions tested involved the within subjects factor, and none was significant.

Insert Tables 3 & 4 about here

Cognitive Learning

Hypothesis 1 stated that students enrolled in a mixed-size format of the basic course show greater improvement in cognitive learning scores than do students in self-contained sections. The findings supported this hypothesis. ANOVA results revealed a significant within subjects interaction effect for time by format on cognitive learning, $\underline{F}$ (832,1) = 7.93; p = .005; eta^2 = .01. The means in Table 3 show that students in large-lecture/break-out sections had more cognitive learning gain than did students in self-contained sections. In addition, the between subjects main effect for format was significant, $\underline{F}$ (832,1) = 12.41; p < .001; eta^2 = .02.

Hypothesis 3 posited that students who perceive their teachers as more (versus less) immediate show greater improvement in cognitive learning. This hypothesis was supported. ANOVA results revealed a significant within subjects interaction effect for time by immediacy on cognitive learning, $\underline{F}$ (832,1) = 6.97; p = .008; eta^2 = .01. The means from Table 3 reveal that students who perceive their teachers as highly immediate show a larger gain in cognitive learning from time 1 to time 2 than do students who perceive their teachers as less immediate. Similarly, the between subjects main effect due to immediacy on the cognitive test average score was also significant, $\underline{F}$ (832,1) = 11.98; p = .001; eta^2 = .01.

Research Question 1 inquired whether student perceptions of teacher immediacy interact with delivery format on cognitive learning. The findings indicate no such effect. ANOVA revealed no within

subjects interaction effect for time by format by immediacy, F (832,1) = 1.44; p = .23. Moreover, the between subjects interaction effect for format by immediacy was not significant, F (832,1) = .79; p = .37.

Hypothesis 5 predicted that students who perceive themselves as higher in communication apprehension show less improvement in cognitive learning than do students who report lower levels of communication apprehension. This hypothesis was not supported. ANOVA revealed no within subjects interaction effect for time by trait apprehension, F (832,2) = .17; p = .85 or for time by apprehension change, F (832,2) = 1.56; p = .21. However, the between subjects main effect for trait apprehension on the cognitive test was significant, F (832,2) = 5.33; p = .005; eta^2 = .01. The means in Table 3 and post-hoc Scheffe' test revealed that students who report low trait communication apprehension earned a higher score on the average of the pre- and post-tests scores than did students who reported moderate or high trait apprehension.

Research Question 3 investigated whether student self-perceptions regarding communication apprehension interact with delivery format on cognitive learning. The findings reveal no such effect. ANOVA revealed no within subjects interaction effect for time by format by trait apprehension, F (832,2) = .72; p = .49; or time by format by apprehension change, F (832,2) = .35; p = .70. Moreover, the between subjects interaction effects were not significant for format by trait apprehension, F (832,2) = .69; p = .50; or format by apprehension change, F (832,2) = .34; p = .71.

Affective Learning

Hypothesis 2 queried whether students enrolled in self-contained sections of the basic course show greater improvement in affective learning scores than do students in a mixed size format. The findings supported this hypothesis. We should first note that student affect toward the course did not increase; rather, it decreased. ANOVA results reveal a significant within subjects main effect for time, F (832,1) = 13.49; p < .001; eta^2 = .02. As for an interaction between time and format, ANOVA results revealed a significant within subjects interaction effect on affective learning, F (832,1) = 3.88; p = .049; eta^2 = .01. The means from Table 4 indicate that students in self-contained sections showed less of a decease in affective learning than

did students in large-lecture/break-out sections. In addition, the between subjects main effect for format was significant, $\underline{F}$ (832,1) = 7.43; p = .007; eta^2 = .01. That is, students in self-contained sections had higher average scores for affective learning over time than did students in large-lecture/break-out sections.

Hypothesis 4 posited that students who perceive their teachers as more immediate show greater improvement in affective learning. This hypothesis was partially supported (given the finding that affective learning decreased overall). ANOVA results revealed a significant within subjects interaction effect for time by immediacy on affective learning, $\underline{F}$ (832,1) = 15.95; p < .001; eta^2 = .02. The means from Table 4 reveal that students who perceive their teachers as highly immediate maintain their level of affective learning from time 1 to time 2 whereas students who perceive their teachers as less than highly immediate significantly decreased in affective learning. Similarly, the between subjects main effect due to immediacy on the affective test average score was also significant, $\underline{F}$ (832,1) = 46.36; p < .001; eta^2 = .05. That is, students who perceived their instructors as highly immediate had higher average scores for affective learning than did students who perceived their instructors as less immediate.

Research Question 2 inquired whether student perceptions of teacher immediacy interact with delivery format on affective learning. The findings partially supported such an effect. ANOVA revealed no interaction effect for time by format by immediacy, $\underline{F}$ (832,1) = .90; p = .34. However, the between subjects interaction effect for format by immediacy was significant, $\underline{F}$ (832,1) = 3.81; p = .051; eta^2 = .01. The means from Table 4 show that when students perceive their teacher as highly immediate, their average over time on the affective measure does not differ based upon class format. However, when the teacher is perceived as less immediate, affective learning (i.e., the average of pre- and post-test scores) is lower for students in a large-lecture/break-out sections than it is for students in a self-contained sections.

Hypothesis 6 contended that students who self-report communication apprehension show less improvement in affective learning than do students who report lower levels of communication apprehension. This hypothesis was supported. ANOVA revealed a significant within subjects interaction

effect for time by apprehension change, F (832,2) = 9.81; p < .001; eta² = .02 though no interaction effect for time by trait apprehension, F (832,2) = .03; p = .97. The means in Table 4 and post hoc Scheffe' test reveal a disordinal effect in which students who report reduced apprehension show an increase in affective learning. However, students who report increased or stable apprehension show a decrease in affective learning.

In addition to the within subject effect for apprehension change, there was a significant between subject main effect for trait apprehension on the affective measure, F (832,2) = 5.33; p = .005; eta² = .01. The means in Table 4 and post hoc Scheffe' tests reveal that all groups differ significantly from each other. Specifically, students who reported low trait communication apprehension had the highest score on the pre- and post-test affective measures; students who report moderate trait apprehension score in the middle; and students who report high apprehension report the lowest scores for the affective measures.

Research Question 4 investigated whether student communication apprehension interacts with delivery format on affective learning. The findings revealed no such effect. ANOVA revealed no within subjects interaction effect for time by format by trait apprehension, F (832,2) = 1.74; p = .18; or time by format by apprehension change, F (832,2) = .72; p = .49. Moreover, the between subjects interaction effects were not significant for format by trait apprehension, F (832,2) = .53; p = .59; or format by apprehension change, F (832,2) = .94; p = .39.

Supplemental Analyses for Learning Loss

Given the above findings regarding cognitive and affective learning over time, only two-way interactions and main effects on students' perception of learning loss were examined in the supplementary analyses. A 2 x 2 x 3 x 3 factorial ANOVA revealed no significant two-way interaction effects. However, there were significant main effects for format, F (729,1) = 17.41; p < .001; eta² = .02 and for immediacy, F (729,1) = 39.18; p < .001; eta² = .05. The means for format in Table 5 reveal a pattern similar to the pattern found for affective learning. Specifically, participants in the mixed-size format reported higher learning loss than did participants in self-contained sections. In addition, the means for immediacy in Table 5 reveal that

students who perceive their teachers as highly immediate report lower learning loss than do students who perceive their teachers as less immediate.

Insert Table 5 about here

Discussion

This investigation examined potential links between delivery format, impressions of teacher immediacy, communication apprehension, and learning outcomes. Previous research has indicated that large class size likely inhibits cognitive and affective learning outcomes (e.g., Glass & Smith, 1979). The current study focused on a mixed-size format to examine whether such a format negatively affects learning compared to small, self-contained sections. To explain how delivery format differentially impacts cognitive and affective learning, we proposed that mixed-size formats reduce the opportunity for student interaction and student involvement in activities that promote affective learning. In addition, we proposed that mixed-size formats provide a consistent conceptual base for understanding course content.

Delivery Format and Learning Outcomes

Both cognitive learning and affective learning appear to be modestly, though systematically, affected by delivery format. First, in terms of cognitive learning, the findings indicated that students enrolled in a mixed-size format achieved a slightly higher gain in cognitive learning than did students enrolled in self-contained sections. This finding supports the argument that a mixed-size format may lead to enhanced cognitive learning outcomes. Importantly, the effect size for this difference was small, indicating that there was little difference between formats on cognitive learning. Moreover, the supplemental analyses with perceived learning loss revealed that students believed that they learned less in the mixed-size format versus the self-contained section format.

Nonetheless, the findings indicated that students in the mixed-size format slightly outperformed students in self-contained sections on a test of cognitive principles. Consistent with proposition two, the focus on cognitive principles in the lecture-based large class (versus the activity-based, exclusively small class), probably assisted students in grasping and retaining the cognitive principles (see also Garside, 1996; Rovin et al., 1972). An alternate interpretation of this finding suggests that the consistency provided by a centralized lecture led to greater improvement on a common examination. In other words, the material presented in the centralized lecture consistently addressed key course principles, whereas small, independent sections may or may not have covered all the material represented on the common examination.

Unlike cognitive learning, affective learning did not significantly increase from pre-test to post-test. Instead, reports of affective learning decreased from the first day of class to the 13th week of the semester for most students. Moreover, scores for students enrolled in the mixed-size format reflected a larger decrease in affective learning than did students enrolled in self-contained sections. However, this effect size was also small, suggesting that there was little difference in loss of affective learning due to format. Although the threat posed by delivery format to affective learning is small, format appears to exert a negative influence on student values regarding the course material. As suggested by proposition one, students value courses most when they consistently are afforded opportunities for interaction and involvement. In addition, the smaller effect size found for the current study compared to those reported in Smith and Glass's (1980) meta-analysis, also suggests that the mixed-size format might represent an important improvement over the exclusively large lecture format with regard to affective learning. Future research might investigate this possibility.

This finding regarding format and affective learning also appears to reflect the commonly heard student complaint regarding large class size: students generally do not like large-lecture classes (Cheatham & Jordan, 1976). This dislike for the format may spill over to a devaluing of course content. Analysis of pre-test scores revealed a small ($eta^2 = .01$) but significant difference on affective learning items between the two

formats: at the beginning of the term students enrolled in the mixed-size format reported lower values for course content than did students enrolled in self-contained sections.

The decrease in affective learning across all sections was not anticipated. This finding is probably linked to the different affective states experienced by students over the course of the semester and academic year. For example, the first day of class in Fall semester reflects a new beginning after a long break. This sense of new beginning may engender positive affect toward school. On the other hand, the last two weeks of the semester are likely to involve high amounts of stress and perhaps grade anxiety. Similar to the construct of motivation to learn (e.g., Christophel, 1990), such negative emotions may lead to negative affect toward school and specific classes. Future research might further probe connections between different types of learning outcomes and student emotions and motivation over time.

Student Perceptions of Teacher Immediacy and Learning

The findings regarding teacher immediacy must be interpreted carefully. The mean for immediacy revealed that most students perceived their instructors as immediate. The findings reflected differences between immediate versus highly immediate teachers (i.e., there was no low or non-immediate group), which may have led to the small effect sizes found for immediacy in the current study. Nonetheless, this small distinction in perceptions of immediacy led to significant findings. Students who perceived their teachers as highly immediate showed a higher gain in cognitive learning, consistent with prior research into immediacy and cognitive learning (e.g., Rodriguez et al., 1996). In addition, perceptions of teacher immediacy seemed to moderate affective learning loss over time. Specifically, affective learning scores did not decrease for students who reported higher perceptions of teacher immediacy.

The current study also investigated potential interactions between immediacy and delivery format on learning outcomes. The findings pertaining cognitive learning revealed no such effect. Apparently, immediacy and delivery format function separately to explain changes in cognitive learning over time.

There was a significant between subjects effect on affective learning for the interaction. Students who perceived their instructors as highly immediate did not differ by format on their mean affective learning score from pre-test to post-test. However, for students who perceived their instructors as less immediate, format differentiated affective learning averages such that mixed-size-format students reported lower affective learning than did self-contained section format students. This finding suggests that teacher immediacy moderates the negative affect of delivery format on affective learning, such that an engaging lecturer can inspire affective learning even in the large class context. Specifically, nonverbal immediacy represents a tool that teachers can use to involve students. This interpretation is consistent with proposition one's contention that students' perceptions that they are involved leads to higher affective learning.

Student Communication Apprehension and Learning

Communication apprehension was examined in two ways: trait apprehension and changes in apprehension were investigated. The findings did not fully support the argument that students who report higher apprehension achieved less cognitive learning. In addition, changes in apprehension were not linked to cognitive learning. However, the significant between subjects effect indicates that students who reported lower trait apprehension scored higher on the combined pre- and post-test cognitive learning scores. Apparently, students reporting low (versus moderate or high) apprehension knew more of the cognitive principles from the course at both the beginning and end of the semester. This link between communication knowledge and communication apprehension supports the basic course philosophy that the more students know about communication processes the more likely they are to experience reduced apprehension.

Moreover, the findings revealed a significant effect for changes in apprehension on affective learning gains. Specifically, students who reported reduced apprehension show an increase in affective learning. However, students who report increased or stable apprehension show a decrease in affective learning. Similarly, a significant between subjects effect emerged for trait apprehension across groups: as apprehension increased, affective learning decreased. This pattern of findings indicates that highly

apprehensive students find less value in the course content. In addition, changes in apprehension differentiate students who value the course more from students who value the content less. Importantly, the means for affective learning reported in Table 4 reveal that most students valued the course material. However, students with lower trait apprehension and students whose apprehension subsided over time found the most value in the course. In addition, communication apprehension and delivery format did not appear to interact to affect learning outcomes.

Conclusion

This investigation provided support for the view that format has differential effects on cognitive and affective learning. The findings reveal a small (but significant) positive effect on cognitive learning based upon format. In addition, the findings also show a modest negative effect on affective learning and students' perceptions of their cognitive learning. However, the findings with regard to immediacy and communication apprehension suggest that these communication factors may moderate negative impact on affective learning.

Notes

[1]Given prior research that suggested a potential curvilinear trend in the relationship between immediacy and learning outcomes (Comstock et al., 1995), two one-way ANOVAs were performed using the immediacy scores divided into five equal groups. The results for cognitive learning support a linear trend, $F(843,4) = 25.15$; $p < .01$ versus a curvilinear trend, $F(843,4) = 3.34$; $p > .05$. Similarly, the results for affective learning also support a linear trend, $F(843,4) = 13.90$; $p < .01$ versus a curvilinear trend, $F(843,4) = .18$; $p > .05$.

[2]Christophel's measure consists of six sets of semantic differentials with response options from 1-7. For consistency sake, response options were 1-5 for the current investigation.

[3] Pre-test scores were not used for the reduction of items to a reliable and valid set because of the presumption that those scores would not be reliable due to participants' lack of knowledge of the subject matter at the time of the pre-test.

[4]Contact the first author for exact F-ratios.

[5]Although there were two different created variables that focused on student perceptions of communication apprehension (trait apprehension and changes in apprehension), the authors did not test for an interaction between these two variables or for a four-way interaction among all the variables in the analysis. Analyses comparing or relating these two variables would be confounded by the fact the same measure was used to create the variables. However, both variables are important to the study as each focuses on different aspects of the participants apprehension: trait and change.

References

Andersen, J. (1979). Teacher immediacy as a predictor of teaching effectiveness. In D. Nimmo (Ed.), Communication Yearbook, 3, (pp. 543-560). New Brunswick, NJ: Transaction Books.

Bloom, B. S. (1956). A taxonomy of educational objectives: The classification of educational goals, Handbook I: Cognitive domain. New York: Longman.

Bourhis, J. & Allen, M. (1992). Meta-analysis of the relationship between communication apprehension and cognitive performance. Communication Education, 41, 68-76.

Buerkel-Rothfuss, N. L., & Weaver II, R. L. (1993). Teaching formats: Large lecture versus small sections. In L.W. Hugenberg, Gray, P. L., & D. M. Trank (Eds.), Teaching and directing the basic communications course (pp.203-211). Dubuque, IA: Kendall/Hunt.

Calfee, R. C. (1994). Cognitive assessment of classroom learning. Education and Urban Society, 26, 340-351.

Carlson, R. E., & Smith-Howell, D. (1995). Classroom public speaking assessment: Reliability and validity of selected evaluation instruments. Communication Education, 44, 87-97.

Cheatham, R., & Jordan, W. (1976). Cognitive and affective implications of class size in a lecture-practicum speech communication course. Improving College and University Teaching, 24 , 251-254.

Christensen, L. J., & Menzel, K. E. (1998). The linear relationship between student reports of teacher immediacy behaviors and perceptions of state motivation, and of cognitive, affective, and behavioral learning. Communication Education, 47, 82-90.

Christophel, D. M. (1990). The relationship among teacher immediacy behaviors, student motivation, and learning. Communication Education, 39, 323-340.

Comadena, M. E., & Prusank, D. T. (1988). Communication apprehension and academic achievement among elementary and middle school students. Communication Education, 37, 270-277.

Comstock, J., Rowell, E., & Bowers, J. W. (1995). Food for thought: Teacher nonverbal immediacy, student learning, and curvilinearity. Communication Education, 44, 251-266.

De Cecco, J. P. (1964). Class size and co-ordinated instruction. British Journal of Educational Psychology, 34, 65-74

Dwyer, K. K. (1998). Communication apprehension and learning style preference: Correlations and implications for teaching style. Communication Education, 47, 137-150.

Eash, M. J. & Bennett, C. M. (1964). The effect of class size on achievement and attitudes. American Educational Research Journal, 1, 229-239.

Ericson, P., & Gardner, J. (1992). Two longitudinal studies of communication apprehension and its effects on college students' success. Communication Quarterly, 40, 127-137.

Frymier, A. B. (1993). The impact of teacher immediacy on students' motivation: Is it the same for all students? Communication Quarterly, 41, 454-464.

Frymier, A. B., & Thompson, C. A. (1995). Using student reports to measure immediacy: Is it a valid methodology? Communication Research Reports, 12, 85-93.

Garside, C. (1996). Look who's talking: A comparison of lecture and group discussion teaching strategies in developing critical thinking skills. Communication Education, 45, 212-227.

Gibson, J. W., Hanna, M. S., & Leichty, G. (1990). The basic course at U.S. colleges and universities: V. Basic Communication Course Annual, 2, 233-257.

Giroux, H. A. (1994). Between borders, pedagogy and the politics of cultural studies. New York: Routledge.

Glass, G. V. & Smith, M. L. (1979). Meta-analysis of research on class size and achievement. Educational Evaluation and Policy Analysis, 1, 2-16.

Goldfinch, J. (1996). The effectiveness of school-type classes compared to the traditional lecture/tutorial method for teaching quantitative methods to business students. Studies in Higher Education, 21, 207-220.

Gorham, J. (1988). The relationship between verbal teacher immediacy behaviors and student learning. Communication Education, 37, 40-53.

Gorham, J. & Zakahi, W. R. (1990). A comparison of teacher and student perceptions of immediacy and learning: Monitoring process and product. Communication Education, 39, 354-368

Gray, P. L. (1989). The basic course in speech communication: An historical perspective. Basic Course Communication Annual, 1,1-27.

Gray, P. L., Buerkel-Rothfuss, N. L., Yerby, J. (1986). A comparison between PSI-based lecture--recitation formats of instruction in the introductory speech communication course. Communication Education, 35, 111-277.

Hayter, J. (1979). How good is the lecture as a teaching method. Nursing Outlook, 27, 274-277.

Hedges, L.V. & Stock, W. (1983). The effects of class size: An examination of rival hypotheses. American Educational Research Journal, 20, 63-85.

Hoover, K. H., Baumann, V. H., & Shafer, S. M. (1970). The influence of class-size variations on cognitive and affective learning of college freshman. Journal of Experimental Education, 38, 39-43.

Kelley, D. H., & Gorham, J. (1988). Effects of immediacy on recall of information. Communication Education, 37, 198-207.

Kulik, J. A. & Kulik, C. C. (1989). Class and school organizations. International Journal of Educational Research, 13, 309-318.

Mahler, S. & Neuman, L. (1987). The effect of personal and institutional variables upon faculty instructional behavior. College Student Journal, 21, 137-145.

McCroskey, J. C. (1982). Introduction to rhetorical communication (4th ed.). Engelwood Cliffs, NJ: Prentice-Hall.

McCroskey, J. C. (1984). The communication apprehensive perspective. In J. A. Daly & J. C. McCroskey (Eds.), Avoiding communication: Shyness, reticence, and communication apprehension (pp. 13-38). Beverly Hills, CA: Sage.

McCroskey, J. C., & Andersen, J. A. (1976). The relationship between communication apprehension and academic achievement among college students. Human Communication Research, 3, 73-81.

McCroskey, J. C., Daly, J. A., & Sorensen, G. A. (1976). Personality correlates of communication apprehension. Human Communication Research, 2, 376-380.

McCroskey, J. C., Sallinen, A., Fayer, J. M., Richmond, V. P., & Barraclough, R. A. (1996). Nonverbal immediacy and cognitive learning: A cross-cultural investigation. Communication Education, 45, 200-211.

McKeachie, W. J. (1994). Teaching tips: Strategies, research, and theory for college and university teachers (9th ed.). Lexington, MA: D.C. Heath.

Mehrabian, A. (1969). Significance of posture and position in the communication of attitude and status relationships. Psychological Bullentin, 71, 359-372.

Meredith, G. M. & Ogasawara, T. H. (1982). Preference for class size in lecture-format courses among college students. Psychological Reports, 51, 961-962.

Moore, A., Masterton, J. T., Christophel, D. M., & Shea, K. A. (1996). College teacher immediacy and student ratings of instruction. Communication Education, 45, 29-39.

Neuliep, J. W. (1995). A comparison of teacher immediacy in African-American and Euro-American college classrooms. Communication Education, 44, 267-277.

Norton, R. W. &. Nussbaum, J. (1981). Dramatic behaviors of the effective teacher. Communication Yearbook, 4, (pp. 565-582). New Brunswick, NJ: Transaction Books.

O'Mara, J., Allen, J. L., Long, K. M., & Judd, B. (1996). Communication apprehension, nonverbal immediacy, and negative expectations for learning. Communication Research Reports, 13, 109-128.

Plax, T. G., Kearney, P., McCroskey, & Richmond, V. P. (1986). Power in the classroom VI: Verbal strategies, nonverbal immediacy and affective learning. Communication Education, 35, 43-55.

Richmond, V. P., Gorham, J. S., & McCroskey, J. C. (1987). The relationship between selected immediacy behaviors and cognitive learning. In M. A. McLaughlin (Ed.), Communication Yearbook, 10, (pp. 574-590). Newbury Park, CA: Sage.

Richmond, V. P., & McCroskey, J. C. (1998). Communication apprehension, avoidance, and effectiveness (5th ed.). Boston, MA: Allyn & Bacon.

Rodriquez, J. I., Plax, T. G., Kearney, P. (1996). Clarifying the relationship between teacher nonverbal immediacy and student cognitive learning: Affective learning as the central causal mediator. Communication, Education, 45, 292-305.

Rovin, S., Lalonde, E., & Haley, J. H. (1972). An assessment of the lecture. Improving College and University Teaching, 22, 326-327.

Sanders, J. A., & Wiseman, R. L. (1990). The effects of verbal and nonverbal teacher immediacy on perceived cognitive, affective, and behavioral learning in the multicultural classroom. Communication Education, 39, 341-358.

Shaughnessy, M. F. (1995). Delivery of the knowledge curriculum vs. skill and competency curriculum. ERIC Document ED384286.

Shor, I. (1992). Empowering education: Critical teaching for social change. Chicago, IL: University of Chicago Press.

Smith, M. L., & Glass, G. V. (1980). Meta-analysis of research on class size and its relationship to attitudes and instruction. American Educational Research Journal, 17, 419-433.

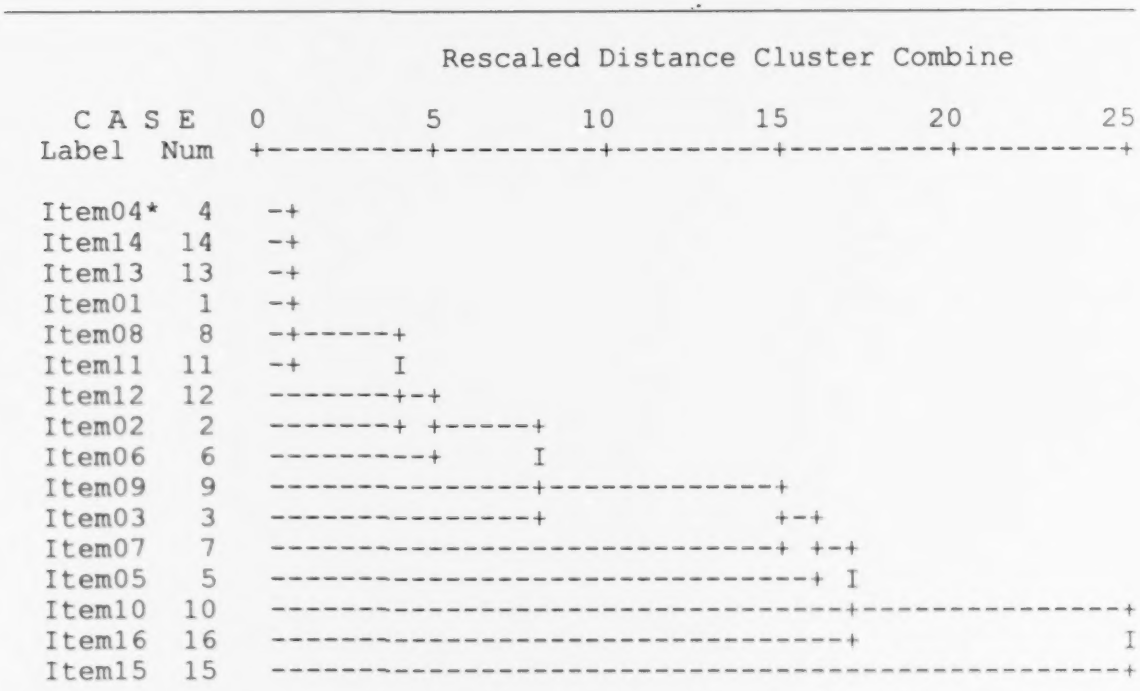
Sprague, J. (1993). Why teaching works: The tranformative power of pedagogical communication. Communication Education, 42, 106-122.

Zabava Ford, W. S., & Wolvin, A. D. (1993). The differential impact of a basic communication course on perceived communication competencies in class, work, and social contexts. Communication Education, 42, 215-223.

Table 1
Primary and Secondary Factor Loadings for the Affective Learning Measure

Items	Factor 1	Factor 2
Learning about cultural diversity issues is vital to learning how to be an effective public speaker.	.09356	.79267
The ability to communicate in group settings is an important skill to learn.	.76060	.15403
A course in public speaking is valuable.	.71584	.22289
Being a skilled listener and consumer of messages benefits a person.	.74629	.15718
This course will be applicable to other courses I encounter.	.65912	.25206
Small group communication is not useful in many situations.	.56588	.15826
Skills learned in public speaking will positively affect one's ability to gain employment.	.71780	.14156
The issue of cultural diversity should be discussed in most university courses about humans.	.10916	.78676
The ability to communicate in group settings is a useful skill to learn.	.80230	.12463
Critical thinking is not an important skill to learn.	.67650	.12790
At some point in life, most people will have to give a speech.	.60141	.08206
Learning about the speaking/listening characteristics of diverse cultural groups is important.	.24611	.80899
Culture is important to study.	.26279	.71343
Participating in small group communication helps people achieve goals.	.58386	.25710
Culture is not a pervasive influence on most aspects of human life.	.28636	.50459
Speech Communication does not make an important contribution to students.	.64950	.22761
The ability to critically analyze public communication is a useful skill to learn.	.53670	.29413
An understanding of cultural diversity does not influence effectiveness of public communication.	.18793	.72762

Figure 1
Dendrogram using Centroid Method For Cognitive Learning Measure Items



*Please see appendix for cognitive measure items.

Table 2
Russell and Rao Similarity Coefficient Matrix For Cognitive Learning Measure Items

Variable	01	02	03	04	06	08	09	11	12	13
Item02*	.5541									
Item03	.5239	.4377								
Item04	.6997	.5960	.5402							
Item06	.5413	.4470	.4214	.5681						
Item08	.6182	.5180	.4913	.6461	.5064					
Item09	.5122	.4133	.3935	.5332	.4296	.4773				
Item11	.6019	.5076	.4633	.6368	.4889	.5774	.4505			
Item12	.5681	.4761	.4342	.6054	.4703	.5378	.4424	.5239		
Item13	.6601	.5600	.5064	.6985	.5425	.6217	.4936	.6158	.5786	
Item14	.7055	.5925	.5495	.7485	.5739	.6682	.5460	.6624	.6123	.7148

*Please see appendix for cognitive measure items.

Table 3
Estimated Means for Within and Between Subjects Tests on Cognitive Learning

Communication Apprehension Trait (CAT) by Format by Immediacy (IMM)

		Average*		Time One		Time Two	
		Format1	Format2	Format1	Format2	Format1	Format2
CAT1	IMM1	7.73	7.23	6.80	6.51	8.66	7.95
	IMM2	7.72	7.41	6.81	6.48	8.64	8.35
CAT2	IMM1	6.94	6.86	5.95	6.30	7.92	7.42
	IMM2	7.51	7.17	6.48	6.31	8.55	8.03
CAT3	IMM1	7.33	6.50	6.54	5.91	8.12	7.09
	IMM2	7.58	7.39	6.52	6.52	8.63	8.26

Communication Apprehension Change (CAC) by Format by Immediacy (IMM)

		Average		Time One		Time Two	
		Format1	Format2	Format1	Format2	Format1	Format2
CAC1	IMM1	7.64	6.73	6.72	6.14	8.56	7.32
	IMM2	7.36	7.31	6.45	6.61	8.27	8.00
CAC2	IMM1	7.26	6.90	6.49	6.24	8.04	7.56
	IMM2	7.73	7.33	6.68	6.44	8.78	8.23
CAC3	IMM1	7.09	6.96	6.09	6.35	8.10	7.58
	IMM2	7.72	7.34	6.68	6.26	8.77	8.41

Format by Immediacy (IMM)

	Average		Time One		Time Two	
	Format1	Format2	Format1	Format2	Format1	Format2
IMM1	7.33	6.86	6.43	6.24	8.23	7.49
IMM2	7.61	7.33	6.60	6.44	8.61	8.21

Format by Communication Apprehension Trait (CAT)

	Average		Time One		Time Two	
	Format1	Format2	Format1	Format2	Format1	Format2
CAT1	7.72	7.32	6.81	6.49	8.65	8.15
CAT2	7.22	7.02	6.22	6.31	8.23	7.72
CAT3	7.45	6.95	6.53	6.22	8.38	7.68

Format by Communication Apprehension Change (CAC)

	Average		Time One		Time Two	
	Format1	Format2	Format1	Format2	Format1	Format2
CAC1	7.50	7.02	6.58	6.38	8.42	7.66
CAC2	7.50	7.12	6.59	6.34	8.41	7.89
CAC3	7.41	7.15	6.38	6.30	8.43	8.00

Table 3, continued

	Immediacy (IMM) by Communication Apprehension Trait (CAT)					
	Average		Time One		Time Two	
	IMM1	IMM2	IMM1	IMM2	IMM1	IMM2
CAT1	7.48	7.57	6.66	6.64	8.31	8.49
CAT2	6.90	7.34	6.13	6.40	7.67	8.29
CAT3	6.91	7.48	6.23	6.52	7.60	8.45

	Immediacy (IMM) by Communication Apprehension Change (CAC)					
	Average		Time One		Time Two	
	IMM1	IMM2	IMM1	IMM2	IMM1	IMM2
CAC1	7.18	7.33	6.43	6.53	7.94	8.14
CAC2	7.08	7.53	6.36	6.56	7.80	8.50
CAC3	7.02	7.53	6.22	6.47	7.84	8.59

	Communication Apprehension Trait (CAT)		
	Average	Time One	Time Two
CAT1	7.52	6.65	8.40
CAT2	7.12	6.26	7.98
CAT3	7.20	6.37	8.03

	Communication Apprehension Change (CAC)		
	Average	Time One	Time Two
CAC1	7.26	6.48	8.04
CAC2	7.31	6.46	8.15
CAC3	7.28	6.34	8.22

	Format		
	Average	Time One	Time Two
Format1	7.47	6.52	8.42
Format2	7.09	6.34	7.85

	Immediacy (IMM)		
	Average	Time One	Time Two
IMM1	7.10	6.34	7.86
IMM2	7.47	6.52	8.41

	Time
Time One	6.43
Time Two	8.13

*Average means are for between subjects effects.

Table 4
Estimated Means for Within and Between Subjects Tests on Affective Learning

Communication Apprehension Trait (CAT) by Format by Immediacy (IMM)

		Average*		Time One		Time Two	
		Format1	Format2	Format1	Format2	Format1	Format2
CAT1	IMM1	4.15	4.29	4.21	4.33	4.09	4.25
	IMM2	4.53	4.48	4.58	4.46	4.48	4.49
CAT2	IMM1	4.05	4.19	4.13	4.25	3.96	4.12
	IMM2	4.28	4.30	4.35	4.23	4.22	4.37
CAT3	IMM1	3.92	4.04	4.02	4.13	3.88	3.96
	IMM2	4.06	4.17	4.02	4.17	4.10	4.17

Communication Apprehension Change (CAC) by Format by Immediacy (IMM)

		Average		Time One		Time Two	
		Format1	Format2	Format1	Format2	Format1	Format2
CAC1	IMM1	4.05	4.14	4.20	4.23	3.90	4.05
	IMM2	4.26	4.31	4.32	4.30	4.21	4.31
CAC2	IMM1	3.98	4.16	4.08	4.23	3.88	4.10
	IMM2	4.25	4.32	4.32	4.33	4.17	4.32
CAC3	IMM1	4.08	4.22	4.08	4.25	4.08	4.18
	IMM2	4.37	4.31	4.32	4.22	4.42	4.40

Format by Immediacy (IMM)

	Average		Time One		Time Two	
	Format1	Format2	Format1	Format2	Format1	Format2
IMM1	4.04	4.17	4.12	4.24	3.95	4.11
IMM2	4.29	4.32	4.32	4.28	4.27	4.35

Format by Communication Apprehension Trait (CAT)

	Average		Time One		Time Two	
	Format1	Format2	Format1	Format2	Format1	Format2
CAT1	4.34	4.38	4.39	4.39	4.29	4.37
CAT2	4.16	4.24	4.24	4.24	4.09	4.25
CAT3	3.99	4.10	4.02	4.15	3.76	4.06

Format by Communication Apprehension Change (CAC)

	Average		Time One		Time Two	
	Format1	Format2	Format1	Format2	Format1	Format2
CAC1	4.16	4.22	4.26	4.26	4.06	4.18
CAC2	4.11	4.24	4.20	4.28	4.03	4.21
CAC3	4.23	4.26	4.20	4.24	4.25	4.29

Table 4, continued

	Immediacy (IMM) by Communication Apprehension Trait (CAT)					
	Average		Time One		Time Two	
	IMM1	IMM2	IMM1	IMM2	IMM1	IMM2
CAT1	4.22	4.50	4.27	4.52	4.17	4.49
CAT2	4.12	4.29	4.19	4.29	4.04	4.30
CAT3	3.98	4.12	4.07	4.09	3.88	4.14

	Immediacy (IMM) by Communication Apprehension Change (CAC)					
	Average		Time One		Time Two	
	IMM1	IMM2	IMM1	IMM2	IMM1	IMM2
CAC1	4.09	4.29	4.21	4.31	3.97	4.26
CAC2	4.07	4.29	4.16	4.32	3.99	4.25
CAC3	4.15	4.34	4.17	4.27	4.13	4.41

	Communication Apprehension Trait (CAT)		
	Average	Time One	Time Two
CAT1	4.36	4.39	4.33
CAT2	4.20	4.24	4.17
CAT3	4.05	4.08	4.01

	Communication Apprehension Change (CAC)		
	Average	Time One	Time Two
CAC1	4.19	4.26	4.12
CAC2	4.18	4.24	4.12
CAC3	4.25	4.22	4.27

	Format		
	Average	Time One	Time Two
Format1	4.16	4.22	4.11
Format2	4.24	4.26	4.23

	Immediacy (IMM)		
	Average	Time One	Time Two
IMM1	4.11	4.18	4.03
IMM2	4.30	4.30	4.31

	Time
Time One	4.24
Time Two	4.17

*Average means are for between subjects effects.

Table 5
Estimated Means for Between Subjects Tests on Learning Loss

	Format by Immediacy (IMM)	
	Format1	Format2
IMM1	1.34	.85
IMM2	.58	.14

	Format by Communication Apprehension Trait (CAT)	
	Format1	Format2
CAT1	1.02	.75
CAT2	1.09	.25
CAT3	.79	.34

	Format by Communication Apprehension Change (CAC)	
	Format1	Format2
CAC1	.80	.46
CAC2	.91	.46
CAC3	1.18	.44

	Immediacy (IMM) by Communication Apprehension Trait (CAT)	
	IMM1	IMM2
CAT1	1.47	.30
CAT2	.92	.42
CAT3	.90	.23

	Immediacy (IMM) by Communication Apprehension Change (CAC)	
	IMM1	IMM2
CAC1	1.09	.17
CAC2	1.05	.32
CAC3	1.15	.47

	Main Effects			
	Comm. App. (Trait)	Comm. App. (Change)	Immediacy	Format
Level 1	.88	.63	1.09	.96
Level 2	.67	.68	.32	.45
Level 3	.57	.81	XX	XX

Appendix: Cognitive Learning Measure Items

01: True or False: It is a good idea to memorize a speech when one feels apprehensive about delivering it.
   a. True
   b. False

02: Persuasive speeches on questions of _____ argue for or against particular courses of action.
   a. need
   b. value
   c. fact
   d. policy

03: True or False: Man and wife are parallel terms.
   a. True
   b. False

04: What is the very first thing you should do when presenting a speech?
   a. Introduce yourself.
   b. Tell the audience why you are here.
   c. Get the audience's attention.
   d. Preview the speech.

05: Audience centeredness is:
   a. Allowing the audience to determine the direction in which the speech progresses.
   b. An audience who is concerned only with themselves, and who are not interested in the speaker's arguments.
   c. Presenting a speech in such a way as to gain a desired response from listeners.
   d. Simplifying information to a level understandable to any audience.

06: Extemporaneous speaking is:
   a. Presenting a speech from a typewritten manuscript.
   b. Speaking to an audience without notes or any formal preparation.
   c. Reciting a speech from memory, and without the use of notes or an outline .
   d. Delivering a rehearsed speech from notes or an outline.

Appendix, continued

07: There are three basic components of an introduction. How many of these components are present in the following sample introduction: "How many of you have ever been hiking in the State College area? Did you know that there are many good hiking trails all around this area? Did you know that hiking is a great way to exercise as well as enjoy nature? To enjoy hiking, you really need very little. For a relatively small investment, you can begin to enjoy the great outdoors starting today if you like."

a. 1
b. 2
c. 3
d. none

08: Rhetoric is best defined as:

a. the practice of intentional coercion.
b. discourse intended to influence attitudes and actions.
c. adjusting the audience to ideas to meet the speaker's goals.
d. speeches for political office.

09: Which of the following represents the minimum information you should orally state in your speech when citing a source?

a. author, date, title, and publisher of publication
b. author and date of publication
c. author, publisher, and title of publication
d. author, date, and title of publication

10: What are the two main characteristics of credibility?

a. trustworthiness and competence
b. sufficiency of outside sources and competence
c. trustworthiness and sufficiency of outside sources
d. dynamism and competence

11: True or False: Repetition and redundancy are necessary in public speaking.

a. True
b. False

12: In order to manage conflict successfully, leaderless problem-solving groups should:

a. devise a procedure for appointing a leader when conflicts develop
b. postpone discussion of controversial matters that arise until conflict subsides
c. double-check and make sure they are following their agenda
d. keep goals and task procedures clearly in focus

Appendix, continued

13: Which pattern of organization would be best for a speech on the process of creating a pillow?
- a. problem-solution
- b. chronological
- c. topical
- d. spatial

14: Pathos refers to:
- a. ethics.
- b. immunization.
- c. emotional appeals.
- d. counter-propaganda.

15: Which of the following illustrates analogical reasoning?
- a. Oreos are great cookies because all kids love them.
- b. Each of Lincoln's "House Divided," "Cooper Union," and "Gettysburg" addresses were great public speeches, therefore Lincoln was a great public speaker.
- c. If you like Pearl Jam you'll like Nirvana.
- d. Because UPS and the Teamsters are on strike, Federal Express and Airborne are experiencing an increase in business.

16: In theory, the use of a standard agenda:
- a. assists in solving problems inductively.
- b. assists groups in all but complete avoidance of conflict.
- c. assists the group in managing its resources efficiently.
- d. involves a sequence, and most groups find it unnecessary and undesirable to deviate from that sequence.